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New record of *Chaetophiloscia hastata* Verhoeff, 1928 for Georgia (Isopoda, Oniscidea, Philosciidae)

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Abstract

Chaetophiloscia hastata Verhoeff, 1928 is recorded from Saskhori limestone quarry (Mtskheta municipality, eastern Georgia). This is the first confirmed record of the genus and species for the Georgian isopod fauna. The species is fully illustrated to facilitate its identification.

Key words

Malacostraca, terrestrial isopods, Saskhori limestone quarry, Caucasus, eastern Georgia

Introduction

Caucasian isopod fauna is poorly investigated and only 35 species of Oniscidea in 19 genera and 8 families are recorded from Georgia (Schmalfuss 2003; Kuznetsova and Gongalsky 2012; Khisametdinova and Schmalfuss 2012; Barjadze et al. 2015, 2019; Turbanov et al. 2016; Arsenashvili et al. 2022). To date, no species in the family Philosciidae have been recorded from the country. Recent investigations in the area of the Saskhori limestone quarry (Mtskheta municipality, Georgia) revealed the presence of *Chaetophiloscia hastata* Verhoeff, 1928 which was already recorded in other Caucasian countries.

Materials and methods

Specimens were sampled using pitfall traps containing formalin and stored in 70% alcohol. Species identification followed the descriptions and figures provided by various authors (Verhoeff 1929; Radu 1959, 1960; Dalens 1973; Schmalfuss 1990; Giurginca and Vănoaica 2002). The species is here illustrated with the aid of a camera lucida mounted on Wild M5 and Wild M20 microscopes. Figures were digitally drawn with the program Microsoft powerpoint 2013, Irfanview and Adobe Photoshop CS6. The specimens examined are deposited in the collections of the Institute of Zoology at Ilia State University, Tbilisi, Georgia (ISUIZ) and the Museum of Natural History, Zoology Section "La Specola", of the University of Florence, Italy (MZUF).

Results

Class Malacostraca Latreille, 1802
Order Isopoda Latreille, 1817
Suborder Oniscidea Latreille, 1802
Family Philosciidae Kinahan, 1857

Genus *Chaetophiloscia* Verhoeff, 1908

Type species. *Philoscia elongata* Dollfus, 1884 by original designation.

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Table 1. List of species of *Chaetophiloscia* with their distributions.

	Species	Distribution
1	*C. almana* Verhoeff & Strouhal, 1967	Turkey
2	*C. attica* (Verhoeff, 1901)	Greece
3	*C. cellaria* (Dollfus, 1884)	Spain; France; Channel Is.; Italy; Switzerland; Slovenia; Croatia; Greece; Hungary; Bulgaria; Turkey; Lebanon
4	*C. elongata* (Dollfus, 1884)	Spain; France; Italy; Croatia; Bosnia and Herzegovina; Greece; Bulgaria; Turkey; Israel; Syria; Lebanon; Algeria; Tunisia
5	*C. glandulifera* Verhoeff, 1908	Italy; Croatia; Bosnia and Herzegovina
6	*C. gravosensis* (Verhoeff, 1901)	Italy; Croatia; Bosnia and Herzegovina
7	*C. hadjissarantosi* Strouhal, 1938	Greece
8	*C. hastata* Verhoeff, 1928	Italy; San Marino; Slovenia; Croatia; Bulgaria; Romania; Cyprus; Libya; Greece; Turkey; Russia; Azerbaijan; Georgia; Iraq; Iran
9	*C. illyrica* (Verhoeff, 1901)	Croatia
10	*C. kinzelbachi* Schmalfuss, 1986	Turkey; Syria
11	*C. lagoi* (Arcangeli, 1934)	Greece; Cyprus
12	*C. leucadia* Strouhal, 1936	Greece
13	*C. penteliconensis* (Verhoeff, 1901)	Greece
14	*C. sicula* Verhoeff, 1908	Canary Is; Spain; France; Italy; Romania; Greece; Crimea; USA; England
15	*C. splitensis* Verhoeff, 1930	Croatia
16	*C. warburgi* Schmalfuss, 1991	Israel
17	*C. weisi* Schmölzer, 1965	Spain

Chaetophiloscia hastata Verhoeff, 1928

Chaetophiloscia elongata; Arcangeli 1923: 1, pl. 1 figs 1-5; 1926: 42 (partim).

Chaetophiloscia hastata Verhoeff 1928: 164, figs 80-83; 1929: 133, figs 1-6; 1931a: 551; 1931b: 236; 1933a: 4, 17, 46, 51, 53, 55; 1933b: 108; 1936: 147; 1938: 123, 126, 128, 133, 134; 1939: 10; 1940: 111; 1941: 252, 263; 1943: 23; Arcangeli 1938: 118; Frankenberger 1939: 23, 24, 30; Radu V.V. 1959: 75, fig. 2; Radu V.G. 1960: 271, figs 3-5; 1985: 30, figs 12, 12bis; Vandel 1965a: 821, 828; 1965b: 264; Schmölzer 1965: 154, fig. 621; Karaman 1966: 386; Zangheri 1966: 519; Messner 1967: 23; Strouhal 1968: 311; Shereef 1970: 368; Andreev 1972: 185; 2002: 68; Dalens 1973: 124, figs 1-5; 1974: 308; Paoletti 1988: 521; Schmalfuss 1990: 181, figs 30-34; 1991: 6; 2003: 79; Manicastri and Taiti 1994: 134; Argano et al. 1995: 17; Andreev and Bozarova 2000: 28; Giurginca and Vănoaica 2002: 161, fig. 1; Giurginca and Curcic 2003: 40; Beron et al. 2004: 797; Giurginca et al. 2009: 35; Gongalsky and Kutzetsova 2011: 918; Baini et al. 2011: 138; 2014: 344, 346, 348; Kashani 2014: 77; 2018: 124; Beron 2020: 235; Giurginca 2022: 119, figs 59A, 60.

Material examined. GEORGIA • 1 ♂ (MZUF); eastern Georgia, Mtskheta municipality, Saskhori limestone quarry, trap N4; 41.844023N, 44.524027E; 655 m a.s.l.; 13 Apr. 2022; leg. L. Shavadze & E. Maghradze; 1 ♂ (MZUF); 1 ♀ (IZISU); same as previous; trap N1; 41.846669N, 44.518673E; 657 m a.s.l.; 13 May 2022; leg. N. Modebadze & M. Gogshelidze.

Remarks. *Chaetophiloscia hastata* was described by Verhoeff (1929) on specimens from Euxinograd, Bulgaria. In a paper published in 1928, Verhoeff cites the species to distinguish it from *C. elongata* and gives some distinguishing characters, such as the enlarged male pereopod 1-2 carpus, the extreme elongation of the male pleopod 5 exopod which surpasses the telson. Moreover, he also illustrated the male pleopod 1 endopod and the male pereopod 7 merus. Since these data unequivocally distinguish the species from all the others in the genus, Verhoeff, 1928 should be considered the authorship of the species instead of Verhoeff, 1929.

Distribution. Slovenia: Istria (Arcangeli 1923); Italy: Veneto (Arcangeli 1938; Paoletti 1988), Marche (Verhoeff 1928), Latium (Verhoeff 1931; Baini et al. 2011, 2014), Emilia Romagna (Arcangeli 1926; Zangheri 1966), Tuscany (Zangheri 1966); San Marino (Verhoeff 1933); Croatia: Cres (Verhoeff 1938; Karaman 1966); Bulgaria: (Verhoeff 1928, 1929; Vandel 1965b; Andreev 1972, 2002); Romania (Radu 1960; Giurginca and Vănoaica 2002; Giurginca and Curcic 2003; Giurginca et al. 2009; Giurginca 2022); Cyprus (Vandel 1965a; Strouhal 1968); Libya: Cyrenaica (Arcangeli 1938); Egypt (Shereef 1970); Greece (Dalens 1973, 1974; Schmalfuss 1990); Turkey (Verhoeff 1941; Schmalfuss 1990); Azerbaijan (Schmalfuss 1990); Russia: Caucasus and Black Sea coast (Verhoeff 1933b; Gongalsky and Kutznetsova 2011); Iraq (Frankenberger 1939); Iran (Kashani 2014). The species was cited also for Palestine by Vandel (1965a) and Strouhal (1968) but the record is doubtful according to Schmalfuss (1990). First record for Georgia.

Discussion

The genus *Chaetophiloscia* comprises with certainty 17 species mainly distributed in the countries bordering the Mediterranean and Black Sea (Schmalfuss 2003) (Table 1). Only a few species have been introduced into other parts of the world, e.g., *C. sicula* Verhoeff, 1908 in USA (Hornung and Szlávecz 2003) and in greenhouses in England (Gregory 2014). Other five species presently included in the genus certainly do not belong to *Chaetophiloscia* but their re-examination is necessary for placement in a correct genus: *C. frontalis* Lemos de Castro, 1967 from Brazil, *C. gatunensis* (Van Name, 1926) from Costa Rica, Panama and supposed-

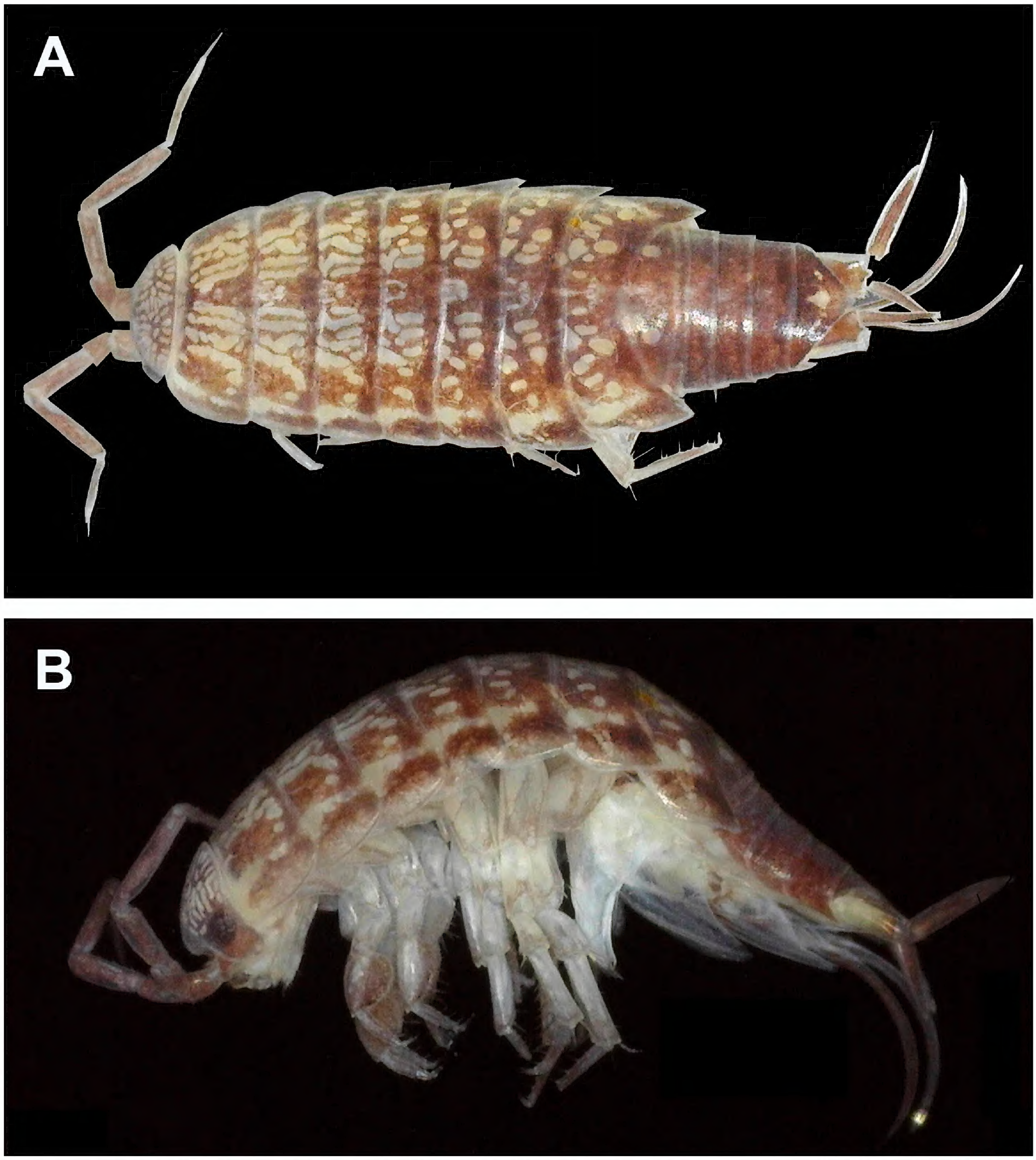

Figure 1. *Chaetophiloscia hastata*, ♂ from Saskhori limestone quarry, eastern Georgia. **A** – dorsal view; **B** – lateral view.

ly in Brazil, *C. grayi* Vandel, 1973 from Australia, *C. guernei* (Dollfus, 1887) from the Azores, and *C. starostini* Borutzky, 1953 from Tadjikistan (Schmalfuss 2003).

Even if *Chaetophiloscia hastata* is well characterized from the descriptions and figures given by previous authors, it is fully illustrated here (Figs. 1–5) to provide a comparison with all the other species in the genus. The species is readily distinguishable by the enlarged carpus of the male pereopod 1 (Fig. 4A) and, to a lesser extent, 2, and the extreme elongation of the male pleopod 2 endopod (Fig. 5A) and male pleopod 5 exopod (Fig. 5D). These characters of *C. hastata* might suggest its inclusion in a distinct genus but all the other characters present in the type-species *Chaetophiloscia elongata* (Dollfus, 1984) and in the other species of the genus seem to confirm its belonging to the genus *Chaetophiloscia*. These characters are the position of the noduli laterales (Fig. 2A) with the d/c coordinates showing a maximum on pereonite 4, the cephalon (Fig. 2B) with suprantennal line and no frontal line, the pleon (Fig. 1A, B) narrower than pereon with epimera reduced, the mandibles (Fig. 3A,B) with molar penicil dichotomized, the maxillula (Fig. 3C) with the inner set of teeth apically cleft, and the maxilliped (Fig. 3E) endite without penicil.

In the Caucasus area, *Chaetophiloscia hastata* was previously recorded only from Azerbaijan by Schmalfuss (1990) and from southern Russia (Abrau Peninsula and Sochi) by Verhoeff (1933) and Gongalsky and Kutznetsova (2011). Furthermore, *C. hastata* was reported from the

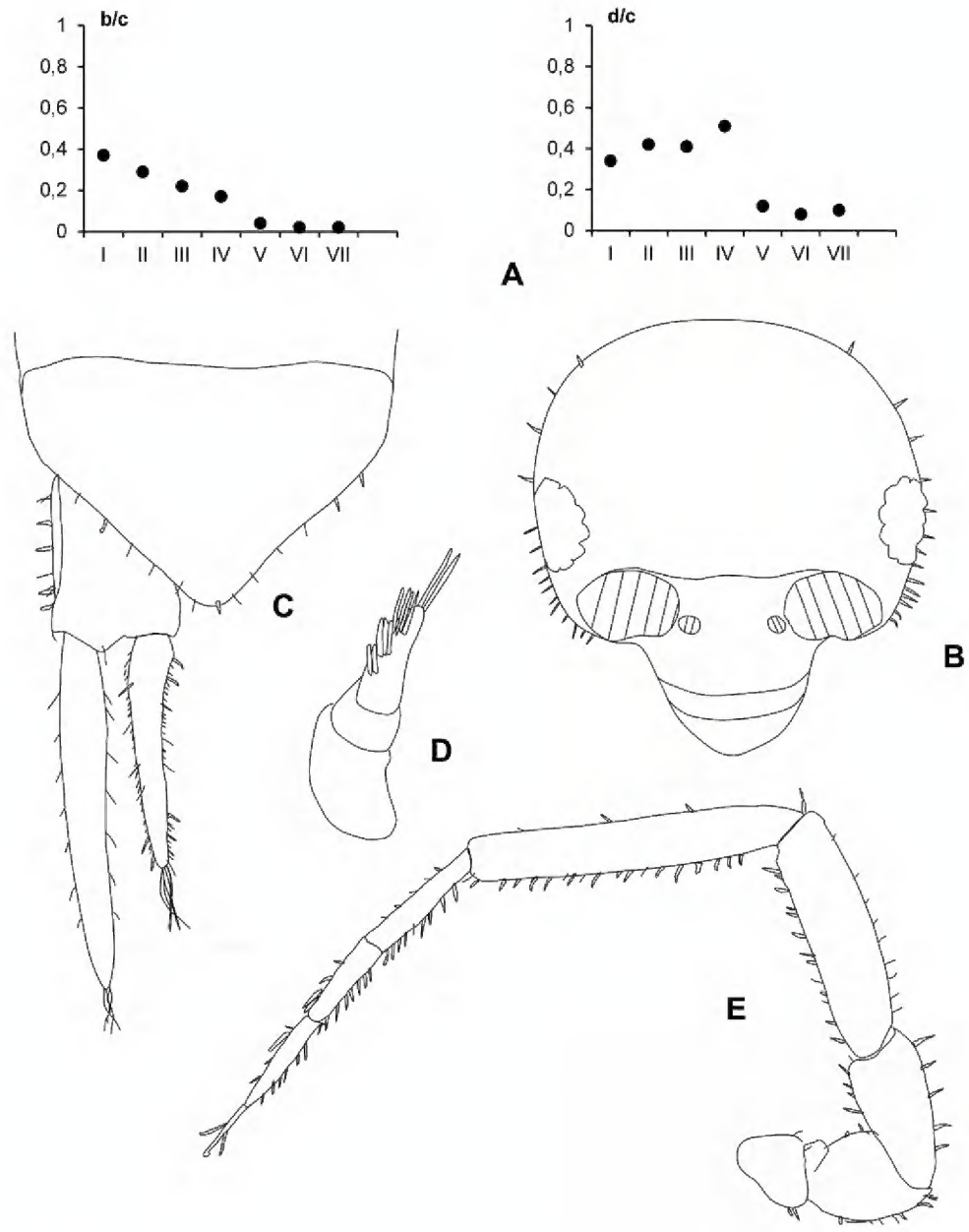

Figure 2. *Chaetophiloscia hastata*, ♂ from Saskhori limestone quarry, eastern Georgia. **A** – coordinates of noduli laterales; **B** – cephalon, frontal view; **C** – telson and left uropod; **D** – antennula; **E** – antenna.

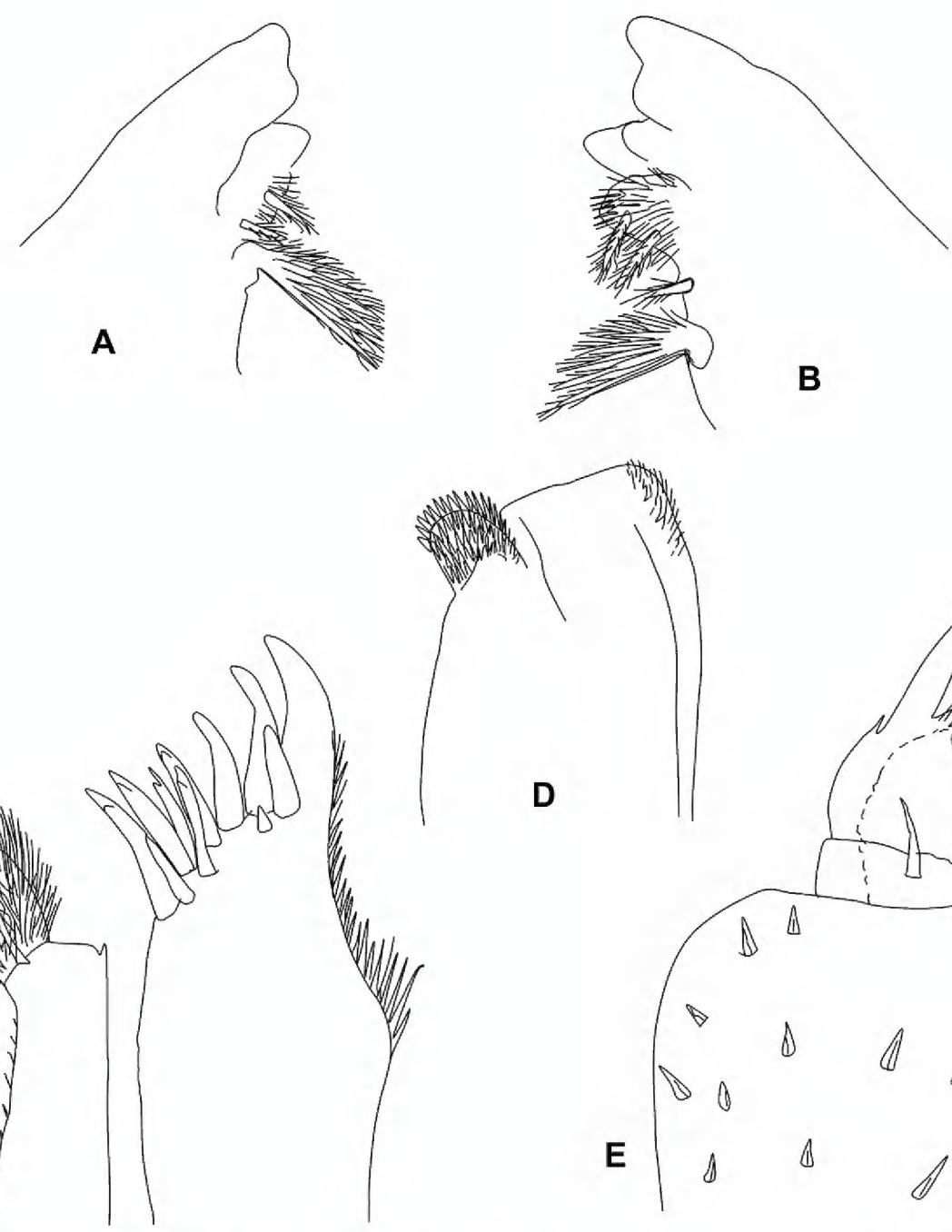

Figure 3. *Chaetophiloscia hastata*, ♂ from Saskhori limestone quarry, eastern Georgia. **A** – right mandible; **B** – left mandible; **C** – maxillula; **D** – maxilla; **E** – maxilliped.

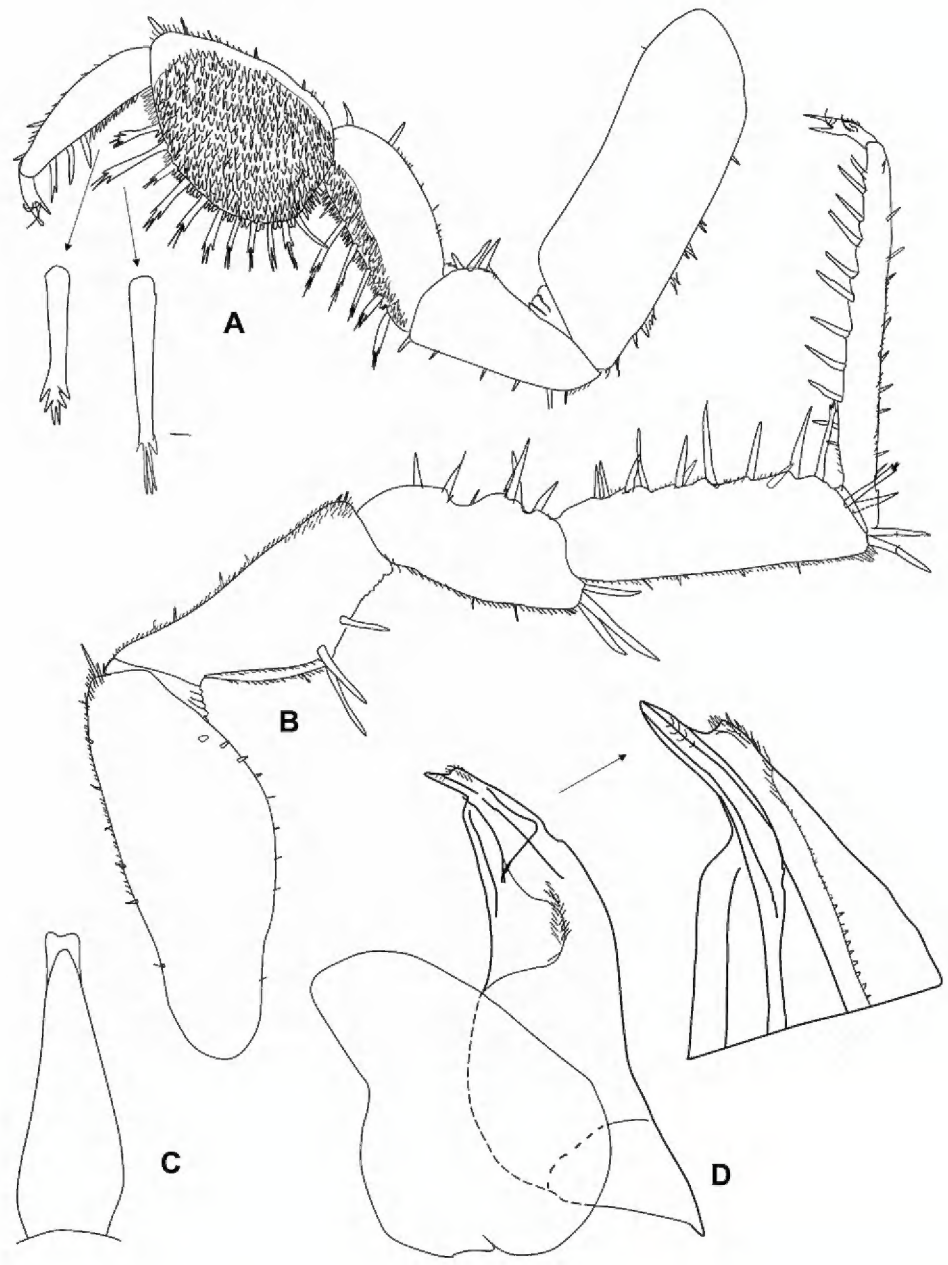

Figure 4. *Chaetophiloscia hastata*, ♂ from Saskhori limestone quarry, eastern Georgia. **A** –pereopod 1; **B** – pereopod 2; **C** – genital papilla; **D** – pleopod 1.

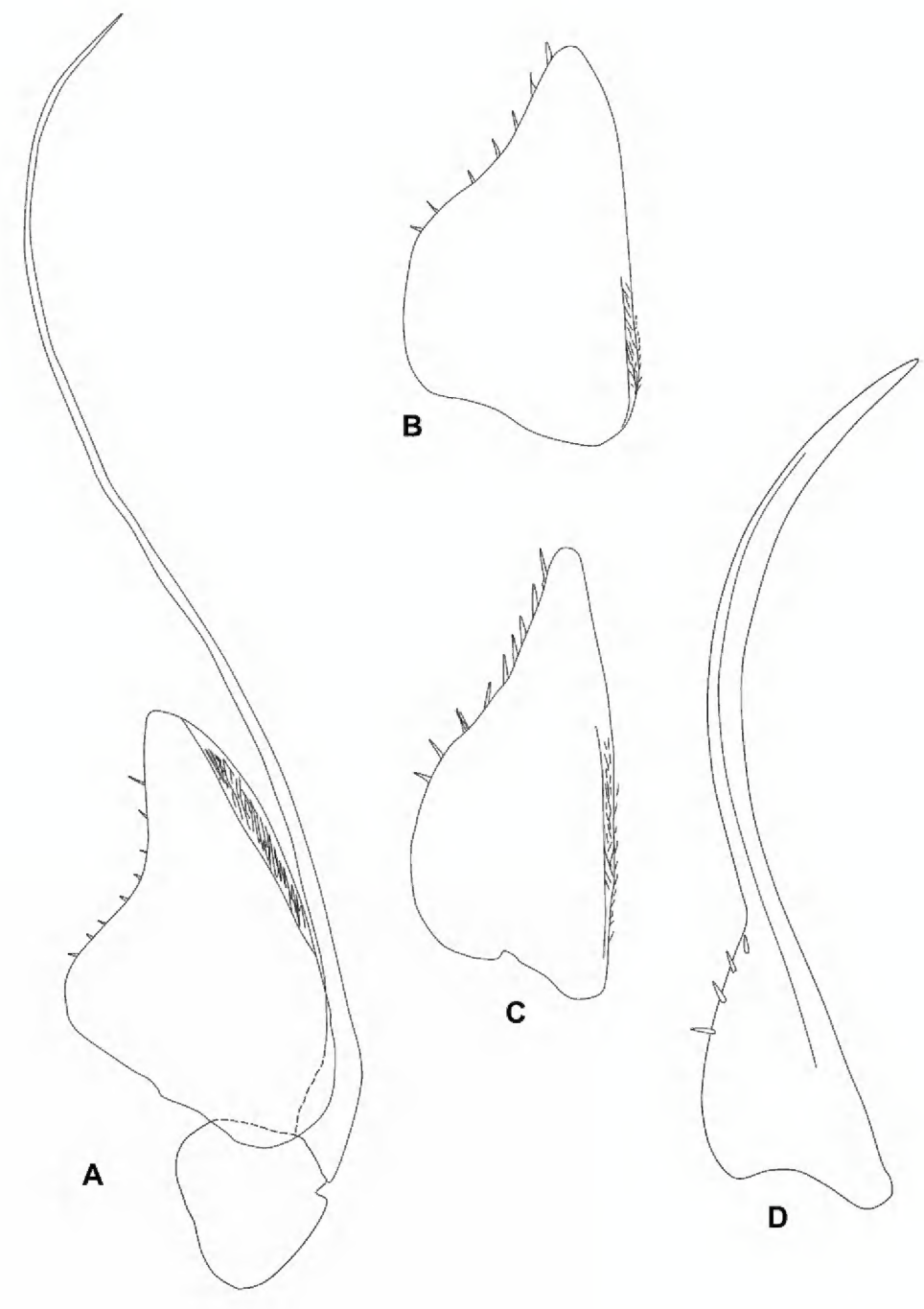

Figure 5. *Chaetophiloscia hastata*, ♂ from Saskhori limestone quarry, eastern Georgia. **A** – pleopod 2; **B** – pleopod 3 exopod; **C** – pleopod 4 exopod; **D** – pleopod 5 exopod.

Batumi (Georgia) area on April 8, 2022, according to the iNaturalist website (https://www.inaturalist.org/observations/110758777). However, this record should be considered doubtful, because it was determined just based on photos, where the main characters to identify the species cannot be visible. Hence, the Saskhori limestone quarry represents the first confirmed record of both the genus and species for Georgia. Given the high similarity of specimens photographed in Batumi's surroundings to *C. hastata*, we believe the species may also occur along Georgia's Black Sea coast and may be more widespread throughout the country.

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